



553392

(43) International Publication Date
28 October 2004 (28.10.2004)

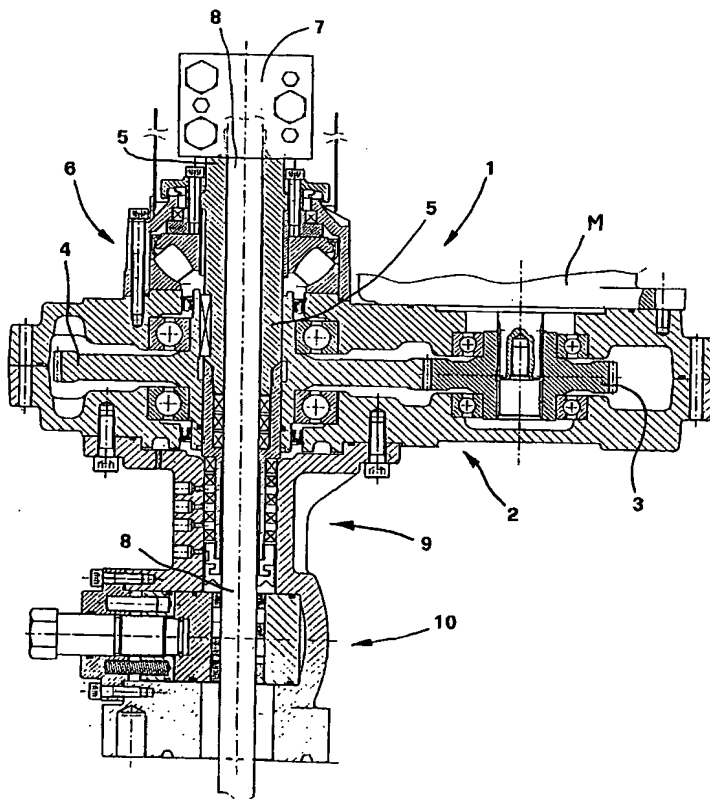
PCT

(10) International Publication Number
WO 2004/092539 A1

- (51) International Patent Classification⁷: **E21B 43/12**
- (21) International Application Number:
PCT/IT2003/000779
- (22) International Filing Date:
26 November 2003 (26.11.2003)
- (25) Filing Language: Italian
- (26) Publication Language: English
- (30) Priority Data:
PCT/IT03/00233 15 April 2003 (15.04.2003) IT
- (71) Applicant (for all designated States except US): **SAI HYDRAULICS INC.** [US/US]; 3905 W. 9th Street, Trainer, PA 19061 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **PECORARI, Mariano** [US/US]; 610 Michigan Ave., Swarthmore, PA 19081 (US). **PECORARI, Pietro** [IT/IT]; Via della Primula, 7, I-41010 Modena, fraz. S. Donnino N. (IT).
- (74) Agent: **GASPARINI, Alberto**; c/o Botti & Ferrari - find-eroute -, Corso Cavour, 36, I-41100 Modena (IT).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: **IMPROVED PUMP DRIVE HEAD WITH INTEGRATED STUFFING BOX AND CLAMP**



(57) Abstract: The improved pump drive head (1) has an integrated stuffing box (9) and comprises: a power transmission (3, 4) coupled to the rotating pump driveshaft (8) within a crude oil well; a stuffing box (9) to retain the pressure; a thrust assembly (6) adapted to take the tensile force exerted on said pump shaft. It further has said power transmission comprised of a tube (5, 16) arranged to be rotated coaxially with the shaft (8) and having at least two different diameters. The rotary seals (20; 50) fit over the small outside diameter of the tube to establish fluid-tightness between said tube and the body (19) of the stuffing box. The working diameter (51) of the seals (20; 50) is smaller than the large outside diameter of said tube (5, 16). Static seals (17) are provided between the tube and the shaft (8). Thus, the static seals (17) and rotary seals (20; 50) are adapted to come away along with said tube and the retainer ring (22) for the seals. Advantageously, associated with said head is the improved clamp (10) for locking the rotary pump driveshaft (8) in crude oil wells, which clamp includes a jaw pair (35, 36), a pull one (35) and a push one (36) operated by means of a screw (38) acting with its end on one jaw (35) and engaging a threaded hole in the other jaw (36).



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.